

13-Diverse circular single-stranded DNA viruses discovered from research greenhouses and agro-ecosystems.

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This study focuses on the diversity of circular single-stranded DNA (ssDNA) viruses associated with *Poaceae* growing in the fynbos ecosystem and its neighbouring agro-ecosystems in the Cape floristic region of Southern Africa. We have developed a sequence-independent approach that combined two methods, including a first step of rolling circle amplification (RCA) followed by a second step of whole genome amplification (WGA). We have first tested and validated this approach using controls from our laboratory, including 4 *Geminiviridae* (sugarcane/*Sugarcane streak Egypt virus*; *Datura stramonium*/*Tomato leaf curl virus*, *Datura stramonium*/*Tomato yellow leaf curl virus* and *Euphorbia caput-medusae*/*Euphorbia caput-medusae stunt virus*) and 2 double-stranded DNA *Caulimoviridae* (banana/*Banana streak Obino l'Ewai virus* and *Arabidopsis thaliana*/*Cauliflower mosaic virus*). The RCA/WGA approach was successful for unambiguously detecting the 4 *Geminiviridae* tested but failed to detect both *Caulimoviridae*. In addition to the 4 expected *Geminiviridae*, 2 Mastrevirus (located within the sugarcane plant), two Circovirus (banana and turnip) and three mycoviruses (banana, turnip and *Euphorbia caput-medusae*) were detected by performing Blast searches. This approach was then used for detecting the presence of circular ssDNA viruses within 23 South African *Poaceae*. Again, several ssDNA viruses were detected, including Mastrevirus, Begomovirus, Circovirus, mycoviruses and unknown ssDNA viruses. This study confirms the presence of a wealth of ssDNA viral sequences within plants that blur the boundaries between previously well-defined groups and stresses the need to better understand the evolutionary history of circular ssDNA viruses and to revisit current taxonomic classification schemes (Rosario et al., 2012).

Rosario,K., Duffy,S., and Breitbart,M. (2012) A field guide to eukaryotic circular single-stranded DNA viruses: insights gained from metagenomics. *Archives of Virology* **157**: 1851-1871.